RTS™ Two Wire Intercom Series
innovating the future of communications

Model PS-15
Power Supply



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CUSTOMER SUPPORT

Technical questions should be directed to:

Customer Service Department
RTS/Telex Communications, Inc.
12000 Portland Avenue South
Burnsville, MN 55337 USA
Telephone: 800-392-3497
Fax: 800-323-0498

RETURN SHIPPING INSTRUCTIONS

Customer Service Department
Telex Communications, Inc. (Lincoln, NE)
Telephone: 402-467-5321
Fax: 402-467-3279
Factory Service: 800-553-5992

Please include a note in the box which supplies the company name, address, phone number, a person to contact regarding the repair, the type and quantity of equipment, a description of the problem and the serial number(s).

SHIPPING TO THE MANUFACTURER

All shipments of product should be made via UPS Ground, prepaid (you may request from Factory Service a different shipment method). Any shipment upgrades will be paid by the customer. The equipment should be shipped in the original packing carton. If the original carton is not available, use any suitable container that is rigid and of adequate size. If a substitute container is used, the equipment should be wrapped in paper and surrounded with at least four (4) inches of excelsior or similar shock-absorbing material. All shipments must be sent to the following address and must include the Proof of Purchase for warranty repair. Upon completion of any repair the equipment will be returned via United Parcel Service or specified shipper, collect.

Factory Service Department
Telex Communications, Inc.
8601 East Cornhusker Hwy.
Lincoln, NE 68507 U.S.A.
Attn: Service

This package should include the following:

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SECTION 1: DESCRIPTION AND SPECIFICATIONS

1.1 DESCRIPTION

The Model PS15 Power Supply is designed to work within the TW Intercom System. The PS15 is suitable for small to medium sized TW Intercom Systems.

The unit is self-contained and features two-channel operation: one "wet" channel with 24 to 32 volts DC and one "dry" channel without voltage potential. Each channel provides an audio termination impedance of 200 or 400 ohms (switch selectable).

This power supply allows speech signals and DC to exist on the same wire (Channel 1). The power supply's outputs are protected against short circuit conditions with recovery being automatic and instantaneous.

A single PS15 Power Supply can power 6 to 30 user stations (depending on model and combination - see specifications).

If still more user stations are needed, two PS15 Power Supplies can be coupled together to double the powering capability; a 1/4-inch 3-circuit phone jack is available on each power supply for this purpose. This connector can also be used as a one-way output port when monitoring or recording the intercom audio signals.

When two PS15 supplies are combined, toggling a rear panel switch on each supply will keep the audio level constant. Two PS15's can power as many stations as a PS31 (with DC load evenly distributed between the two supplies). Since the PS31 supplies more voltage than the PS15 under full load, the PS31 is better suited to power a large system spread over a large area.

There are two XLR-type 3-pin male connectors mounted on the rear panel for output interconnection to the user stations.

The PS15 has been designed to meet UL 1419 specifications (Professional Audio and Video Equipment).

The PS15 Power Supply may be used in portable applications (use optional MCP8 channels) or in standard EIA equipment racks (use optional MCP1 or MCP2 rack mounting kits).

The PS15 is one rack unit high and one-half rack wide. A single PS15 may be rack-mounted singly or two PS15's may be mounted side-by-side.

1.2 MODEL PS15 SPECIFICATIONS

Outputs
One powered channel, CH1, (audio + DC + 200 ohm/400 ohm 10% termination), and one passive channel, CH2, (audio + 200/400 ohm 20% termination).

Output Voltage

No Load	32.0 +2.0, -1.0 volts
Full Load	24.0 volts, nominal

Output Impedance
200 or 400 ohms 20%, switchable. On powered channel, 200 ohms, nominal, is maintained from 18.0 to 33.0 volts.

Output Current

Standard Option	.9 ampere at 21/+4-2 volts, DC
*P Option (234V)	.9 ampere at 21/+4-2 volts, DC
#D Option (100V)	.8 ampere at 21/+4-2 volts, DC
Fault Current	1.5 amperes at 0.0 volts, DC

Signal Level

Nominal	2.0 volts peak to peak
Maximum	5.0 volts peak to peak

Frequency Response
100 hertz to 20 kilohertz +1, -5 dB

Signal-to-Noise Ratio
Reference 2.0 volts, peak to peak: 60 dB nominal

Mains Voltage

Standard	117 volts ±10%, 50 -60 hertz
*P Option	234 volts ±10% 50-60 hertz
#D Option	100 volts +10%, -5%, 50-60 hertz

Mains Amperes
0.40 at 117 volts ±10%, 50-60 hertz
0.20 at 234 volts ±10%, 50-60 hertz
0.40 at 100 volts +10%, -5%, 50-60 hertz

Environmental

Temperature	
Operating	0° to 50°C
Storage	-40° to 70°C
Humidity	0 to 95%, non-condensing

Dimensions

Height	1.72 inches (44 millimeters)
Width	8.186 inches (207.9 millimeters)
Depth	8.33 inches (211.6 millimeters)

Weight

PS15	4.29 pounds (1.95 kilograms)
MCP1	1.0 pounds (0.454 kilograms)
MCP2	1.0 pounds (0.454 kilograms)

Finish
Thermoplastic front panel, aluminum case, light gray finish

SECTION 2: INSTALLATION

2.1 MECHANICAL INSTALLATION

The Model PS15 can be installed in 3 ways: a single unit mounted in a half rack space using an optional Model MCP2 Kit for rack mounting a single unit; or two PS15 supplies mounted side by side using the optional MCP1 Kit for rack mounting two units side by side; or free standing using the optional MCP8 Kit for adding side channels for non-rack mounting portable use.

2.2 OUTPUTS

Located on the back panel are the outputs. The PS15 is designed to accept A3F 3-pin female connectors.

2.3 POWER and INPUT POWER SELECTION

The power cord is attached to the rear panel. Power selection is normally done at the factory. If field change of the input mains voltage is required, disconnect the power, open the case, and set jumpers as follows (using layout diagram on page 10):

For 117 VAC operation, T1 is Signal Transformer LP56-425 or equivalent; install W1, W2, W4, and W6, remove W3 and W5. * [Standard—American]

For 234 VAC operation, T1 is Signal Transformer LP56-425 or equivalent; install W3, W4, and W6, remove W1, W2, and W5. * [*P Option—European]

For 100 VAC operation, T1 is Signal Transformer LP30-800 or equivalent: install W1, W2, and W5, remove W3, W4, and W6. ** [#D Option—Japanese]

The fuse must also be changed to the rating shown on the rear panel.

* Transformer LP56-425 is a dual primary, dual secondary transformer. The primaries are 115 volts each. The two secondaries are rated 28 volts at 850 milliamperes when connected in parallel. For 115 volt operation, the primaries are in parallel, and the secondaries are in parallel. For 230 volt operation, the primaries are in series, and the secondaries are in parallel.

** Transformer LP30-800 is a dual primary, dual secondary transformer. The primaries are normally rated 115 volts each, but in this case will be operated at 100 volts each. The secondaries are normally rated at 30 volts at 800 milliamperes when connected in series, but with 100 volts at the primaries the output voltage is 26 volts.

Note: The European version of the Model PS15 is equipped with a special three conductor European power cord / plug set. The plug is the a CEE 7/7 style rated for 234 volt / 10 to 16 ampere service. The European version is also equipped with a metric fuse holder and an international 5 by 20 millimeter fuse.

2.4 ELECTRICAL PERFORMANCE AND LOADING

The first table on the next page shows operating distances versus model numbers for the PS15 power supply. The second table on the next page shows the maximum number of user stations that the PS15 can sustain. For combinations of stations, multiply the current values in the first table times the number of units of that type. The sum of all the currents should be less than 1 ampere for the PS15.

2.5 TANDEM OPERATION

Two Model PS15 power supplies can be used in tandem to double the number of stations that can be powered. First, the stations are divided between the supplies. Then, a stereo patch cord is plugged into the stereo jack on the rear panel of each supply. The DUAL/NORMAL switch is set to DUAL. This switch corrects the halving of the impedance of two supplies in parallel by doubling the impedance of each supply from 200 to 400 ohms. The line signal levels are maintained because the net impedance is now 200 ohms.

2.6 AUDIO OUTPUT / INPUT

The AUDIO COUPLING CH1-CH2 jack on the rear panel provides an unbuffered, unbalanced audio output for each of the two channels. The level ranges from -10 dBu to 0 dBu. An isolation transformer is recommended to prevent a ground loop between the intercom system common and other grounds.

The AUDIO COUPLING jack may also be used to input a signal into the system. Use at least a 2.2 kilohm resistor in series with the signal source to prevent loading of the RTS Systems intercom line. Use an audio isolation tranformer to prevent ground loops.

The table below lists maximum operating distances of a PS15 power supply vs. user station model #. Assumptions: 22 gage wire, stations operating with 25Ω headphone load, 10 dB below clipping.

Model #	*Quantity*	I_{tot} *(milliamperes)*	*Distance* (feet)	*Distance* (meters)
BP300		37	5024	1531
BP300L	1	60	3098	944
BP317	1	37	5024	1531
BP320	1	45	4131	1259
BP320L	1	67	2774	846
BP325(St)	1	80	2323	708
BP325SM ** (St)	1	60	3098	944
SPK300	1	100	1859	567
SPK300L	1	125	1487	453

** Surface mount version. (St) means stereo configuration.

The table below lists maximum number of stations versus User Station Type & Model Number (using a PS8 or PS15 power supply). The PS8 rated current is 430 milliamperes, the PS15 rated current is 1000 milliamperes.

Station Type	*Model*	*Qty PS8*	*Qty PS15*
Belt Pack, Headset	BP300	11	27
Belt Pack, Headset, Call Light	BP300L	7	16
Belt Pack, Headset, Single Channel	BP317	11	27
Belt Pack, Headset, Stereo	BP320	9	22
Belt Pack, Headset, Stereo, Call Light	BP320L	6	15
Belt Pack, Headset, Stereo, Call Light, Microprocessor	BP325(St)	5	11
Belt Pack, Headset, Stereo, Call Light, Microprocessor, Surface Mount	BP325(St)	7	16
Speaker, Portable *	SPK300	4	10
Speaker, Portable, Call Light **	SPK300L	3	8

Note: Capacity can be increased by using two power supplies, splitting the load between the two supplies, interconnecting the supplies audio only, and by switching the power supply impedance switches from NORMal to DUAL. * Also valid for RMS300. ** Also valid for RMS300L. WM300, CM300 similar to BP300. WMS300 similar to SPK300. (St) Means Stereo configuration.

SECTION 3: OPERATING INSTRUCTIONS

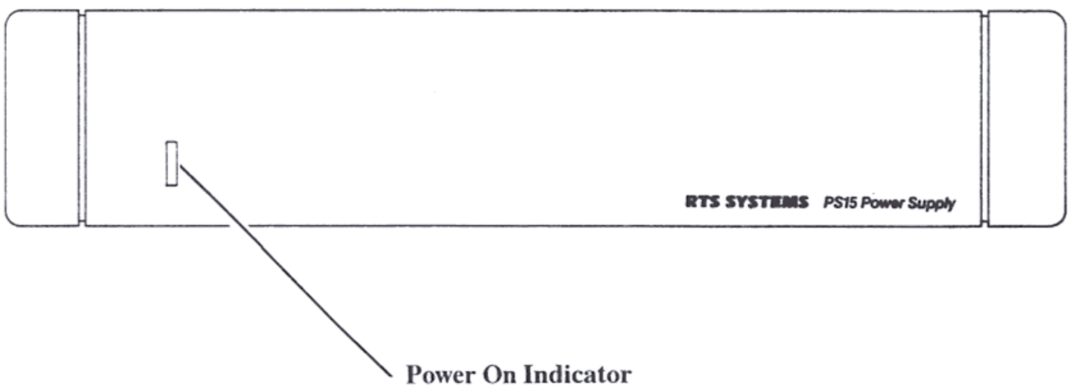


Figure 3-1

Model PS15 Front Panel

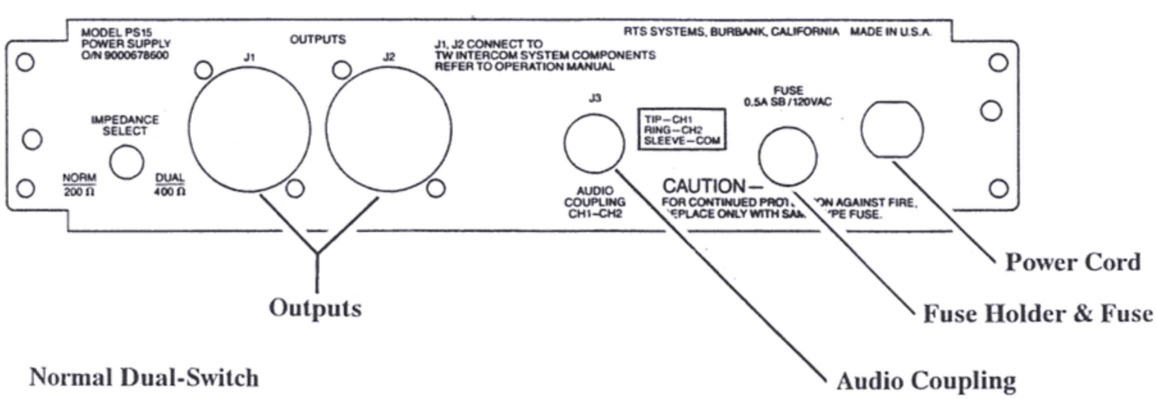
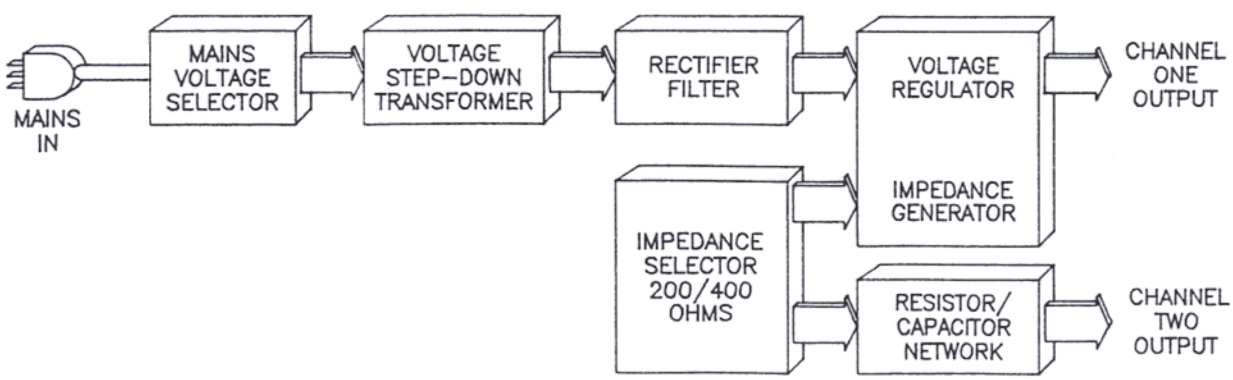


Figure 3-2

Model PS15 Rear Panel

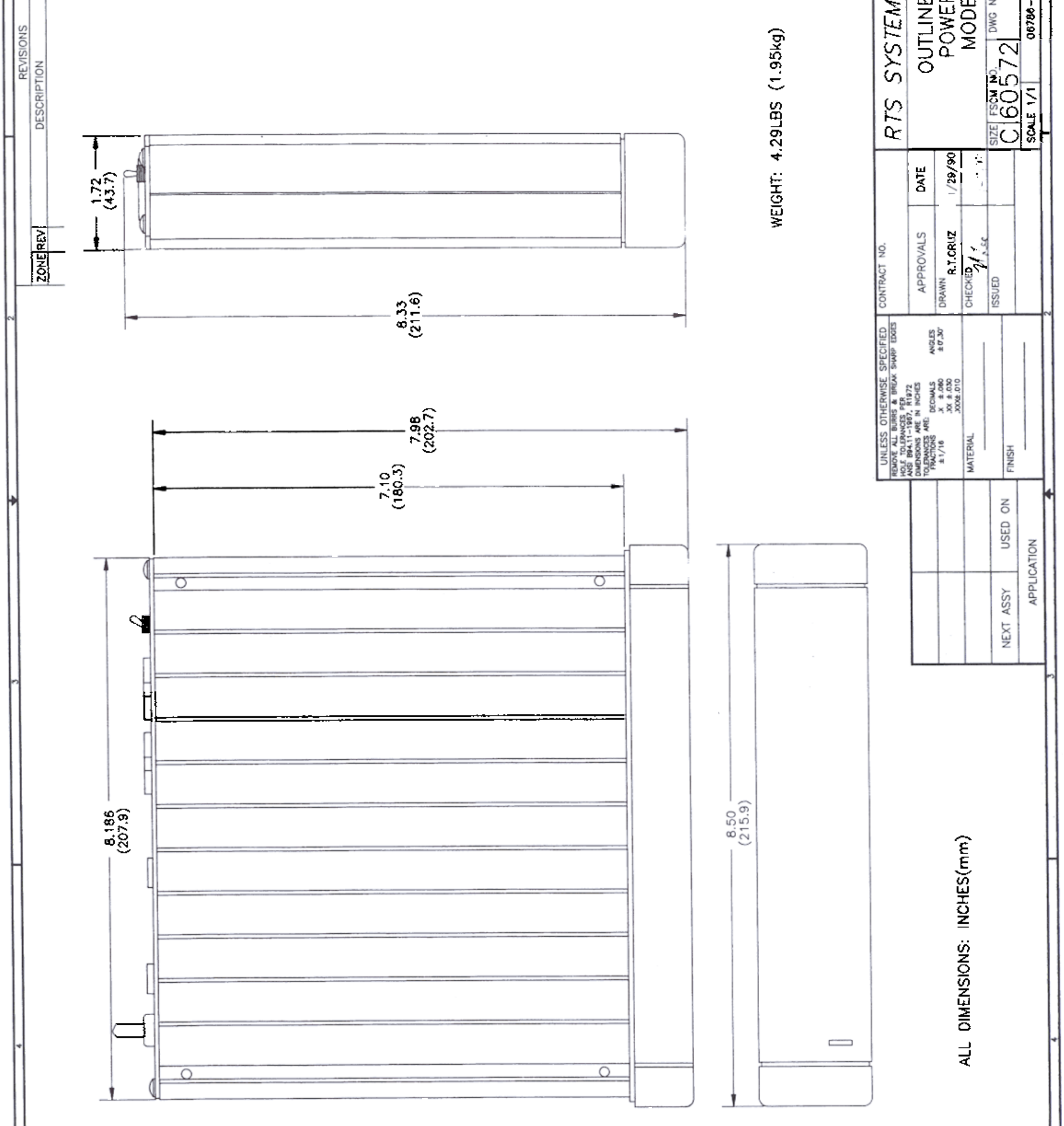
SECTION 7: DIAGRAMS / DRAWINGS

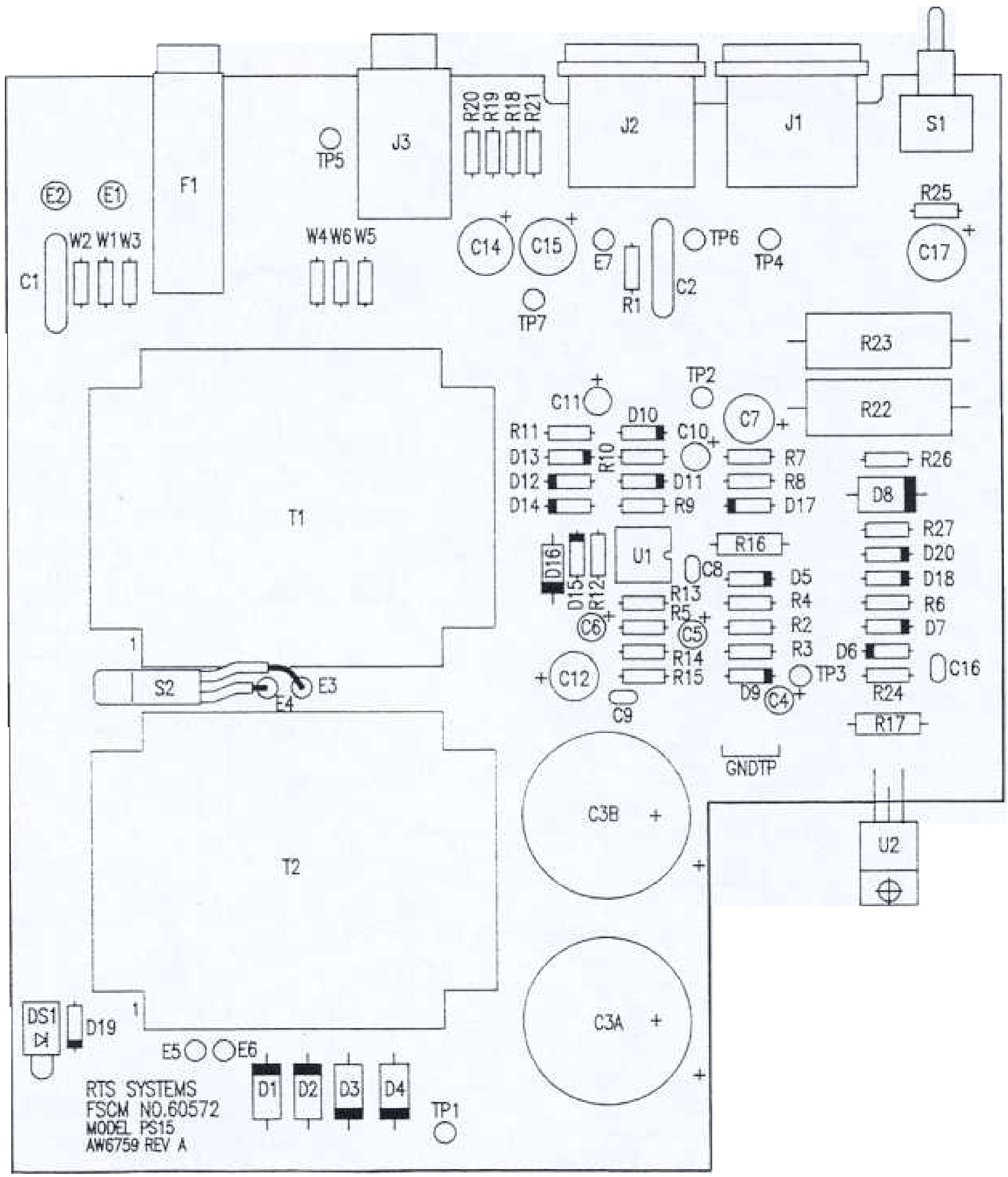
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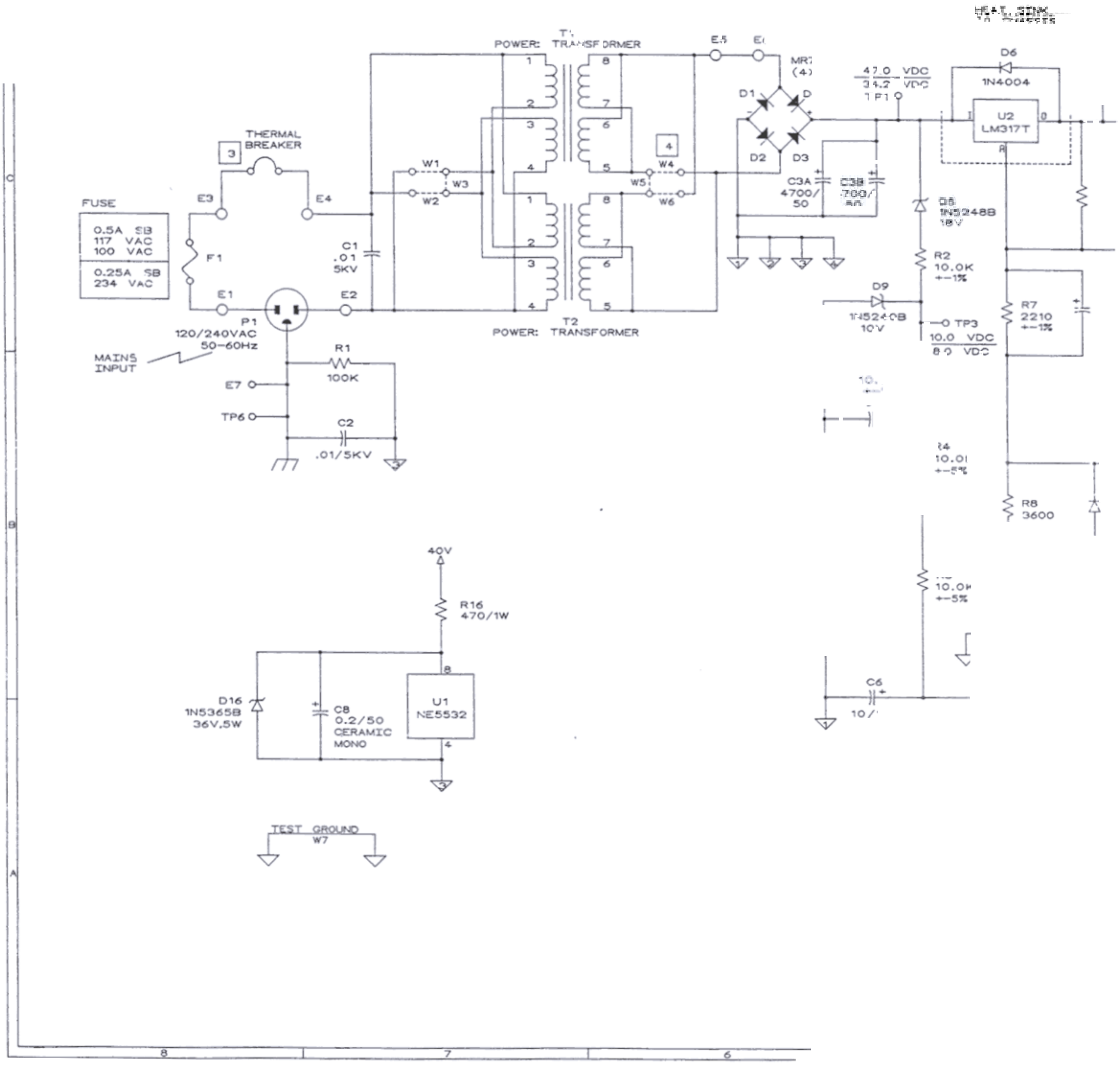
PS15 Block Diagram

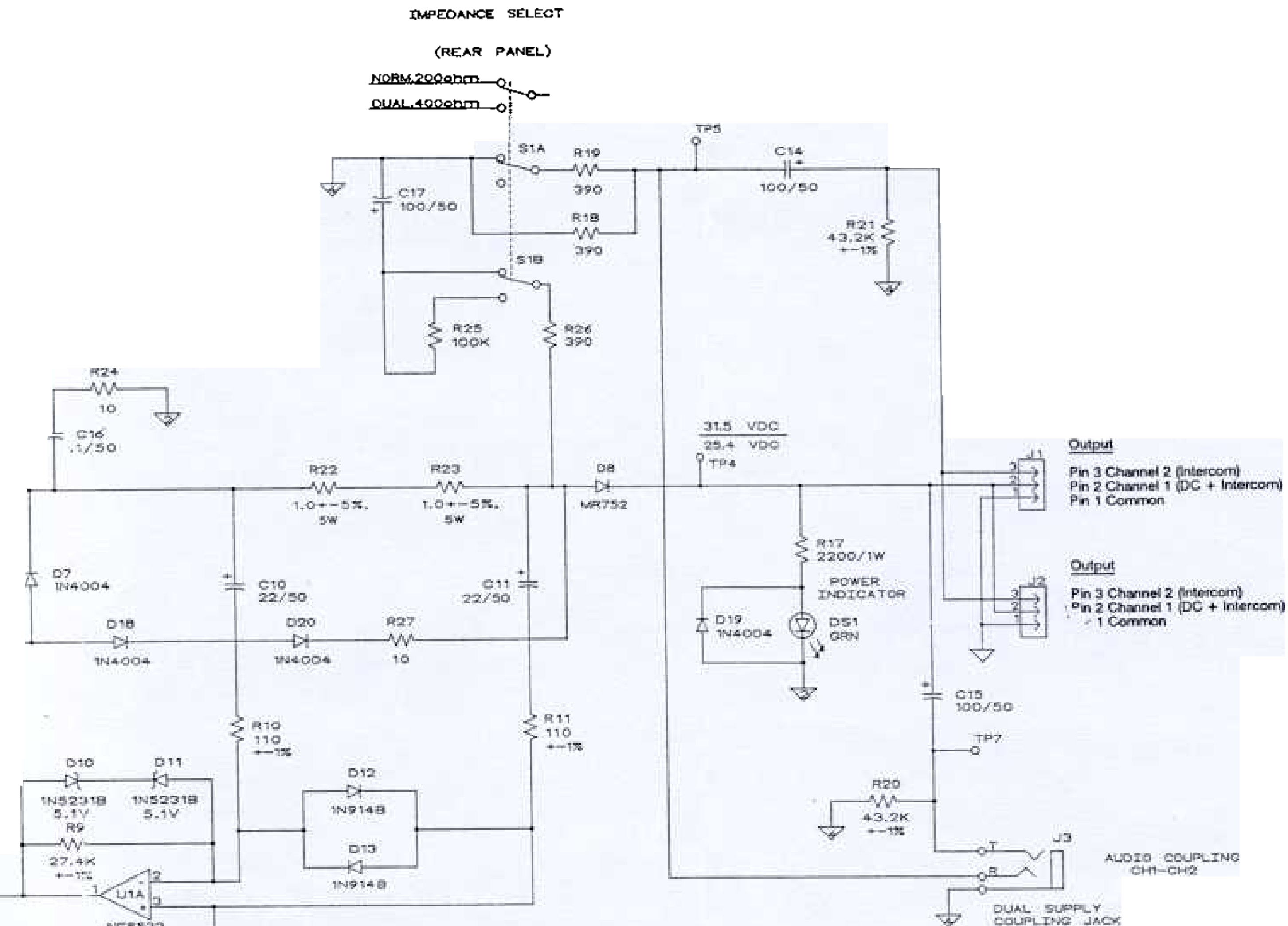
OD2368
Outline Drawing,
Model PS15 Power Supply

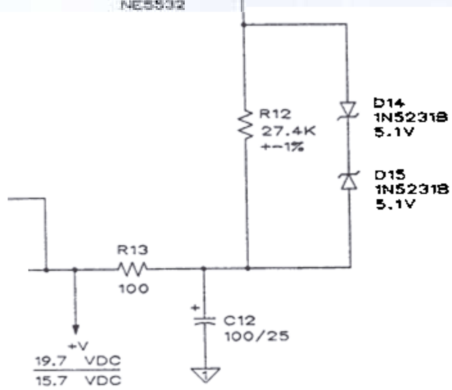




Layout, Printed Circuit Assembly, Model PS15 Power Supply


HEAT SINK
POWER: TRANSFORMER
E5
MR
(4)
D6
1N4004
47.0 VDC
34.2 VDC
TP1
U2
LM317T
D1
D2
D3
THERMAL BREAKER
3
4
FUSE
0.5A SB
117 VAC
100 VAC
0.25A SB
234 VAC
E3
E4
F1
E1
E2
C1
.01
5KV
W1
W2
W3
W4
W5
W6
C3A
4700/
50
C3B
D8
1N5248B
18V
R2
10.0K
+-1%
R7
2210
+-1%
D9
1N5240B
10V
TP3
10.0 VDC
8.0 VDC
T2
POWER: TRANSFORMER
P1
120/240VAC
50-60Hz
MAINS INPUT
R1
100K
E7
TP6
C2
.01/5KV
R8
3600
40V
R16
470/1W
D16
1N5365B
36V,5W
C8
0.2/50
CERAMIC
MONO
U1
NE5532
C6
TEST GROUND
W7
8
7
6





5 VOLTAGES INDICATED BY TEST POINTS HAVE 2% TOLERANCE. TOP VALUE IS NO LOAD CONDITION. BOTTOM VALUE IS FULL LOAD (1 AMP) CONDITION. VOLTAGES APPLY TO INPUT VOLTAGES SHOWN.

4 FOR 100VAC OPERATION:
INSTALL W1,W2 AND W5.
USE TRANSFORMER (115VX2,15VX2,24VA) RTS#2301-0027-00.
FOR 117VAC OPERATION:
INSTALL W1,W2,W4 AND W6.
USE TRANSFORMER (115VX2,28VX2,24VA) RTS#2301-0026-00.
FOR 234VAC OPERATION:
INSTALL W3,W4 AND W6.
USE TRANSFORMER (115VX2,28VX2,24VA) RTS#2301-0026-00.

3 THERMAL BREAKER 95 DEGREES CELSIUS OPENING TEMPERATURE LOCATED BETWEEN T1 AND T2.

2. CAPACITANCE VALUES SHOWN: MICROFARADS/VOLTS.

1. ALL RESISTORS ARE IN OHMS, 1/4 WATT, CARBON FILM, +-5%.

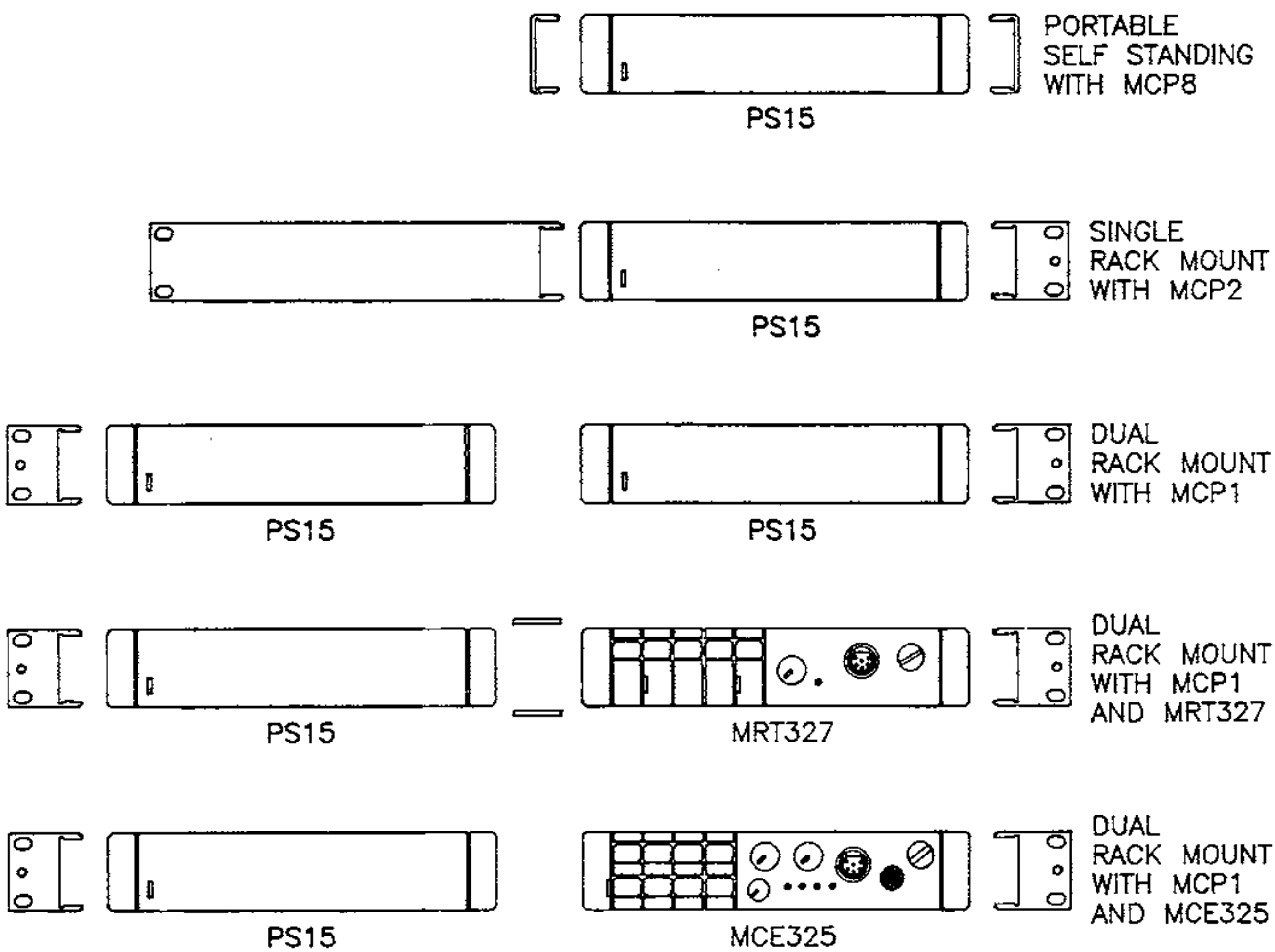
NOTES: UNLESS OTHERWISE SPECIFIED

NOT USED: C13

LAST USED: C17,D20,F1,J1,P3,R27,S2,T2,TP7,W7,U1,DS1

CONTRACT NO.	RTS SYSTEMS Burbank, California			
Drawn R.NEILSON Checked	SCHEMATIC DIAGRAM, TW POWER SUPPLY, MODEL PS15			
Issued	SIZE D	FSCM 60572	DWG NO SD6759	REV B
	DATE 5-7-90		S6759B01	SHEET 1 of 1

4 3 2 1



Installation Illustration——MCP Components